DOCUMENT RESUME

ED 150 011 SE 023 891

TITLE Manpower Planning Criteria Manual, Construction Grants Section.
INSTITUTION Texas State Dept. of Water Resources, Austin.
PUB DATE Sep 77
NOTE 80p.; For related documents, see SE 023 890-892; Not available in hard copy due to print quality

EDRS PRICE MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS *Educational Programs; Environment; Environmental Technicians; *Labor Force; *Manpower Development; *Manpower Needs; *Pollution; Research; Research Methodology; State Agencies; *Water Pollution Control

ABSTRACT

This document presents the material developed in conjunction with a project directed to test a methodology that a state water pollution control agency can use in determining its manpower and training needs. Included is a compilation of the manpower planning criteria used to relate numbers and types of personnel with deferred workloads. It also provides guidance for application of the criteria in assessing manpower and training needs and incorporating these needs into the budget and planning process. (CS)

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MANPOWER PLANNING CRITERIA MANUAL

Tom Jackson

U.S. DEPARTMENT OF HEALTH
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TEXAS DEPARTMENT OF WATER RESOURCES
September 1977

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SE 023 891

MANPOWER PLANNING CRITERIA MANUAL

CONSTRUCTION GRANTS SECTION

TEXAS WATER QUALITY BOARD

FOREWORD

Effective September 1, 1977, Texas' three water resources agencies, the Texas Water Rights Commission, the Texas Water Quality Board, and the Texas Water Development Board, were consolidated to form the Texas Department of Water Resources. A number of publications prepared under the auspices of the predecessor agencies are being published by the TDWR. To effect as little delay as possible in production of these publications, references to these predecessor agencies will not be altered except on their covers and title pages.

Charles E. Nemir
Acting Executive Director

The quantities and descriptions in this manual do not represent final determinations of the Texas Water Quality Board. They should be considered as preliminary determinations which will be refined through further analyses and final review. These quantities and descriptions pertain specifically to the Texas Water Quality Board's construction grants program as being administered in June of 1977.

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I. INTRODUCTION

INTRODUCTION

This manual was developed in conjunction with a project directed towards testing a draft EPA methodology that a state water pollution control agency can use in determining its manpower and training needs. The test was applied to the Construction Grants Section of the Texas Water Quality Board (TWQB).

The basic report, "Pilot Test of State Agency Manpower Planning Methodology for the Texas Water Quality Board Construction Grants Section" describes the approach and presents determinations concerning numbers and types of people needed to effectively manage the TWQB construction grants program.

This manual is a compilation of the manpower planning criteria used to relate numbers and types of personnel with the defined workloads of the TWQB Construction Grants Section. The manual also provides guidance for application of the criteria in assessing manpower and training needs and incorporating these identified needs into the budget and planning process.

The criteria provided in this manual are not intended to prescribe mandatory manpower workload relationships. Rather, they are intended to reflect generally acceptable relationships between types and levels of work and the number and types of people required to accomplish the work.

The criteria in this manual will be updated continually on the basis of experience and to reflect changes in methodology. Suggestions for improvement should be communicated to Tom Jackson, Manpower Planner, Education and Training Section, or Harry Voigt, Chief, Grants Management, Construction Grants Section.

II. FUNCTION DEFINITION

FUNCTION DEFINITION

Municipal Wastewater Treatment Construction Grants

The U.S. Environmental Protection Agency, states, and municipalities jointly manage the construction grants program in compliance with the requirements in P.L. 92-500 and the federal regulations that implemented it. The program involves a three-step grant process: (1) development of facility plans for the planning area; (2) design of the plans and specifications for the facility; and, (3) the construction of the facility.

Subsequent to state certification of funding priority for a municipality, a series of activities must be undertaken before the beginning of construction. These include assistance prior to the award for development of the facility plan, the review of the facility plan and other tasks prior to the award for the design of the facility, and the review of the plans and specs and related tasks prior to the award for construction initiation. The required reviews in this pre-construction stage are outlined in the Title II regulations and state rules of practice and procedure.

Subsequent to final approval of the plans and specs and fulfillment of other requirements, the award is made for construction of the facility. A number of activities are required by EPA, the state, and the municipality to ensure that the facility is constructed as planned. These include review of the contracts, review and approval of change orders, interim and final construction inspections, progress payments to the municipality and contractors, and monitoring of the construction performance against the agreed-upon schedule.

In accomplishing the work involved in the subfunctions outlined above, the Texas Water Quality Board has been certified by the Environmental Protection Agency Region VI for certain tasks beyond those required by P.L. 92-500 and the accompanying federal regulations. These tasks include certification for review of plans and specifications, operation and maintenance manuals, and sewer use ordinances. However, some tasks which have not been certified are reviewed in more detail in order to satisfy state interest within the requirements of the state laws, rules, and regulations.

III. OCCUPATIONAL CRITERIA

RELATION OF OCCUPATIONAL TITLES
TO STATE CLASSIFICATIONS

Occupational Title	Code	State Classification*
Section Chief	A	Engineer V
Chief, Grants Management	B	Engineer IV
Group Leader, (PPM)	C	Administrative Technician IV, Engineering Assistant II
Administrative Assistant II, (PPM)	D	Administrative Technician III
Administrative Assistant I, (PPM)	E	Administrative Technician II
Clerk II	F	Clerk III
Clerk I	G	Clerk II
Technical Assistant II, (PPM)	H	Engineering Technician IV
Technical Assistant I, (PPM)	I	Engineering Technician III
State Loan Officer	J	Engineering Technician IV
Group Leader, (AM)	K	Engineering Technician IV
Administrative Assistant II, (AM)	L	Administrative Technician III
Administrative Assistant I, (AM)	M	Administrative Technician II
Group Leader, (TM)	N	Engineer I, Administrator of Technical Programs I, Hydrologist I
Technical Assistant II, (TM)	O	Engineering Technician V
Technical Assistant I, (TM)	P	Engineering Technician IV
Archaeologist	Q	Administrative Technician III
Administrative/Quality Control Coordinator	R	Engineering Technician V
Chief, Engineering	S	Engineer IV
Project Engineer	T	Engineer I - III
Secretary II	U	Secretary III
Secretary I	V	Secretary II

*The state classification is included in parenthesis on each of the following occupation definitions.

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Chief, Construction Grants Section - A (Engineer V)

Duties: Serves as administrative head of construction grants section. Develops, administers, directs, and coordinates the statewide construction grants program. Develops and directs program policy. Develops and justifies staffing and budgeting needs. Maintains close communication and coordination with Water Quality Board executives and construction grant officials of the U.S. Environmental Protection Agency. Occasional travel is required.

Education and Experience: Registration as a professional engineer is required. At least five years of experience in the design of civil/sanitary facilities is desired. At least two years of experience in the grants management process is required. Broad and detailed knowledge of the construction grants program and related activities of the Texas Water Quality Board is required.

Training Requirements (update, upgrade, short courses): Periodic short courses from universities and EPA Technology Transfer training programs dealing with such things as legal/grants administration, program planning anaysis, operation and maintenance manuals, and facility plans. Periodic short courses in management techniques. Specific courses to be taken as needed include:
"Construction Claims Preparation", "Engineering Management", "Construction Contracts", "Technical Writing for Engineers", "Advanced Water Pollution Control: Physical and Chemical Waste Treatment", and "Effective Technical Presentations".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Chief, Grants Management - B
(Engineer IV)

Duties: Responsible for proper and timely processing of all Title II construction grant applications, preparation and approval of the priority rating lists, and the proper administration of the state enhancement loan program as it applies to construction grants projects. Provide requested information relating to the construction grant applications to the applicants, consulting engineers, and other persons requesting information. Schedules and conducts pre-application conferences when appropriate. Establishes procedures to insure that applicants either present information and data within the required time frame or are eliminated from the program. Maintains a current listing and status of all active applications. Works closely and in coordination with the Chief Engineer and the Chief, Construction Grants Section, to avoid conflicting instructions to an applicant or undue delays in funding or application processing. Assists the Chief, Construction Grants Section, in the preparation of rules, regulations, procedures and policy relating to application processing and related activities. Perform any other duties assigned.

Education and Experience: At least a bachelor's degree in engineering is required. Should be a Civil Engineer and be a Registered Professional Engineer (P.E.). At least five years experience in the design of civil/sanitary facilities is desired and at least two years experience in the grants management process is required. Broad and detailed knowledge of related activities of the Texas Water Quality Board is required.

Training Requirements (update, upgrade, short courses): Periodic university courses to insure currency in new procedures and state of the art advances having to do with sewage treatment design and component improvement. Refresher courses, workshops, seminars, etc. involving management, federal and state construction grant procedures, data processing, and operation and maintenance of sewerage treatment facilities. Specific courses to be taken as needed include: "Environmental Protection Agency Workshop on Construction Grants", "Engineering Management", "Project Management", "Management Introduction to ADP", "ADP Orientation for the User", "Data Base Management Systems Concept", "Water Pollution Engineering", "Workshop in Environmental Assessment", "Wastewater Treatment and Disposal", "Construction Contracts", "Effective Technical Presentations".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Group Leader - Program/Priority Management - C
(Administrative Technician IV, Engineering Assistant II)

Duties: Administers and directs actions of the program/priority management group relating to the scheduling and monitoring of construction grant projects. Supervises the development and implementation of the priority rating system. Develops and makes available budget and manpower plans based on data obtained from grants management and priority rating systems. Provides consultation to city officials, consulting engineers, and other persons interested in program activities.

Education and Experience: College degree in business administration desired. Three to four years of experience in the management of construction grant projects is required.

Training Requirements (update, upgrade, short courses): Periodic specialized courses from universities dealing with such things as management information systems, computer technology, and accounting practices. College courses for career ladder advancement. Specific courses to be taken as needed include: "Environmental Protection Agency Workshop on Construction Grants", "Management Introduction to ADP", "ADP Orientation for the User", "Data Base Management Systems Concept", "Introduction to Supervision", "Basic Oral and Written Communications", "Project Management and Control Workshop", and "Basic Management Functions".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Administrative Assistant II - Program/Priority Management - D (Administrative Technician III)

Duties: Under the direction of the group leader, coordinates the management information system for the purpose of monitoring the status of construction grant projects. This coordination includes project scheduling, fund management, workload projections, records maintenance, project close-out, and overall management of the information system. Assists the group leader in the development of budget and manpower plans. Provides consultation to city officials, consulting engineers, and other persons interested in program activities.

Education and Experience: College degree in business administration desired. Requires one to two years of experience in a position comparable to Administrative Assistant I - Program/Priority Management.

Training Requirements (update, upgrade, short courses): A one-week course offering an overview of the construction grant process. Periodic short courses from universities in business management practices, management information systems, and accounting practices. College courses for career ladder advancement. Specific courses to be taken as needed include: "Environmental Protection Agency Workshop on Construction Grants", "New Employee Orientation", "Automatic Data Processing for Administrative, Clerical, and Secretarial Positions", "Data Base Management Systems Concept", "Basic Oral and Written Communications", "Project Management and Control Workshop", and "Controlling Water Pollution".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Administrative Assistant I - Program/Priority Management - E (Administrative Technician II)

Duties: Under the direction of Administrative Assistant II - Program/Priority Management, assists in the coordination of the management information system for the purpose of monitoring the status of construction grant projects. This coordination includes project scheduling, fund management, workload projections, record maintenance, project close-out, and overall management of the information system. Assists the group leader in the development of budget and manpower plans.

Education and Experience: College degree in business administration or comparable experience desired.

Training Requirements (update, upgrade, short courses): A one-week course offering an overview of the construction grant process. Periodic short courses from universities in business management practices, management information systems, and accounting practices. College courses for career ladder advancement. Specific courses to be taken as needed include: "Environmental Protection Agency Workshop on Construction Grants", "New Employee Orientation", "Automatic Data Processing for Administrative, Clerical, and Secretarial Positions", "Basic Oral and Written Communications", "Data Base Management Systems Concept", "Project Management and Control Workshop", and "Controlling Water Pollution".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Clerk II - F (Clerk III)

Duties: Codes and verifies information for the construction grants data processing program. Assembles data from this program to develop reports used within the section. Updates and maintains construction grant files. No typing is required.

Education and Experience: High school graduate or equivalent. Requires one to two years of experience in a position comparable to Clerk I.

Training Requirements (update, upgrade, short courses): A one-week course offering an overview of the construction grant process. Periodic short courses in data processing. College courses for career ladder advancement. Specific courses to be taken as needed include: "Environmental Protection Agency Workshop on Construction Grants", "New Employee Orientation", "ADP Orientation for the User", "Automatic Data Processing for Administrative, Clerical, and Secretarial Positions", "Basic Oral and Written Communications", and "Controlling Water Pollution".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Clerk I - G (Clerk II)

Duties: Codes and verifies information for the construction grants data processing program. Updates and maintains construction grant files. No typing is required.

Education and Experience: High school graduate or equivalent.

Training Requirements (update, upgrade, short courses): A one-week course offering an overview of the construction grant process. Periodic short courses in data processing. College courses for career ladder advancement. Specific courses to be taken as needed include: "Environmental Protection Agency Workshop on Construction Grants", "New Employee Orientation", "ADP Orientation for the User", "Automatic Data Processing for Administrative, Clerical, and Secretarial Positions", "Basic Oral and Written Communications", and "Controlling Water Pollution".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Technical Assistant II - Program/Priority Management - H (Engineering Technician IV)

Duties: Under the direction of the group leader, develops priority list for ranking of construction grant projects. Conducts pre-rating inspection evaluations and determines the effectiveness of priority rating system. Develops special reports, as needed, based on the priority rating list. Assists group leader in the development of budget and manpower plans. Provides consultation to city officials, consulting engineers, and other persons interested in program activities.

Education and Experience: College degree in business administration desired. Requires one to two years of experience in a position comparable to Technical Assistant I - Program/Priority Management.

Training Requirements (update, upgrade, short courses): A one-week course offering an overview of the construction grant process. Periodic short courses from universities in business management practices, management information systems, and accounting practices. College courses for career ladder advancement. Specific courses to be taken as needed include: "Environmental Protection Agency Workshop on Construction Grants", "New Employee Orientation", "ADP Orientation for the User", "Accounting Orientation for Administrative, Clerical, and Secretarial Positions", "Basic Oral and Written Communications", and "Controlling Water Pollution".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Technical Assistant I - Program/Priority Management - I (Engineering Technician III)

Duties: Under the direction of Technical Assistant II - Program/Priority Management, assists in the development of a priority list for the ranking of construction grant projects. Also assists in the conduction of pre-rating inspection evaluations and the determination of the effectiveness of the priority rating system. Assists in the development of special reports, as needed, based on the priority rating list. Assists group leader in the development of budget and manpower plans.

Education and Experience: College degree in business administration or comparable experience desired.

Training Requirements (update, upgrade, short courses): A one-week course offering an overview of the construction grant process. Periodic short courses from universities in business management practices, management information systems, and accounting practices. College courses for career ladder advancement. Specific courses to be taken as needed include: "Environmental Protection Agency Workshop on Construction Grants", "New Employee Orientation", "ADP Orientation for the User", "Accounting Orientation for Administrative, Clerical, and Secretarial Positions", "Basic Oral and Written Communications", and "Controlling Water Pollution".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: State Loan Officer - J (Engineering Tech. IV

Duties: Reviews state loan applications and prepares summaries of applications for review for the Texas Water Development Board and the Field Operations and Administrative Operations Divisions of the Texas Water Quality Board. Coordinates responses from these entities. Prepares summaries of these responses as well as summaries of applications for review for meetings of the Texas Water Quality Board. Coordinates technical review of state loan applications with appropriate project engineer. Functions in a support capacity to Chief of Grants Management. Provides consultation to city officials, consulting engineers, and other persons interested in program activities. Occasional travel is required.

Education and Experience: College degree in business administration with emphasis on finance is desired. One to two years of experience in a position comparable to Technical Assistant II, Technical Management, or Administrative Assistant II, Administrative Management - is required.

Training Requirements (update, upgrade, short courses): A one-week course offering an overview of the construction grant process. Periodic specialized courses from universities dealing with such things as accounting practices, legal/grants administration, and cost-benefit analysis. College courses for career ladder advancement. Specific courses to be taken as needed include: "Environmental Protection Agency Workshop on Construction Grants", "Environmental Protection Agency Construction Grants Procurement Process Workshop", "Construction Contracts", "Construction Claims Preparation", and "New Employee Orientation".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Group Leader - Administrative Management - K
(Engineering Technician IV)

Duties: Administers and directs actions of the administrative management group relating to grant application processing, priority certifications, engineering contract review, and grant application coordination control. Provides technical assistance and guidance to municipalities in the filing of grant forms. Occasional travel is required.

Education and Experience: College degree in business administration desired. Requires one to two years of experience in a position comparable to Administrative Assistant II - Administrative Management.

Training Requirements (update, upgrade, short courses): Periodic short courses in data processing, legal/grants administration, cost-benefit analysis, program planning analysis, and management techniques. College courses for career ladder advancement. Specific courses to be taken as needed include: "Construction Contracts", "Environmental Protection Agency Construction Grants Procurement Process Workshop", "ADP Orientation for the User", "Management Introduction to ADP", "Introduction to Supervision", and "Basic Management Functions".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Administrative Assistant II - Administrative Management - L (Administrative Technician III)

Duties: Under the direction of the group leader, assists in grant application processing, priority certifications, and engineering contract review. Provides technical assistance and guidance to municipalities in the filing of grant forms. Occasional travel is required.

Education and Experience: College degree (business administration) desired, but not required. Requires one to two years of experience in a position comparable to Administrative Assistant I - Administrative Management.

Training Requirements (update, upgrade, short courses): A one-week course offering an overview of the construction grant process. Periodic short courses in data processing, legal/grants administration, cost-benefit analysis, and program planning analysis. College courses for career ladder advancement. Specific courses to be taken as needed include: "Environmental Protection Agency Workshop on Construction Grants", "New Employee Orientation", "Basic Oral and Written Communications", "Automatic Data Processing for Administrative, Clerical, and Secretarial Positions", "Construction Contracts", "Environmental Protection Agency Construction Grants Procurement Process Workshop", and "Controlling Water Pollution".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Administrative Assistant I - Administrative Management - M (Administrative Technician II)

Duties: Under the direction of Administrative Assistant II, assists in grant application processing. Responsible for application coordination control. Provides technical assistance and guidance to municipalities in the filing of grant forms.

Education and Experience: College degree (business administration) desired, but not required. Appropriate experience may be substituted for formal education.

Training Requirements (update, upgrade, short courses): A one-week course offering an overview of the construction grant process. Periodic short courses in data processing and legal/grants administration. College courses for career ladder advancement. Specific courses to be taken as needed include: "Environmental Protection Agency Workshop on Construction Grants", "New Employee Orientation", "Basic Oral and Written Communications", "Automatic Data Processing for Administrative, Clerical, and Secretarial Positions", "Construction Contracts", "Environmental Protection Agency Construction Grants Procurement Process Workshop", and "Controlling Water Pollution".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Group Leader - Technical Management - N
(Engineering Technician V)

Duties: Administers and directs actions of the technical management group relating to planning area coordination, project summary, bid documents review, payment requests review, operation and maintenance manual review/certification, project cost analysis, value engineering (plan of study costs) and project deactivation. Also supervises the review and certification of such documents as the sewer use ordinance, user charge system, and industrial cost recovery system. Responsible for scheduling and also conducts both interim and final construction inspections. Provides technical assistance and guidance to city officials and consulting engineers. Occasional travel is required.

Education and Experience: College degree in engineering desired but not required. Requires one to two years of experience in a position comparable to Technical Assistant II - Technical Management.

Training Requirements (update, upgrade, short courses): Periodic specialized courses from universities and EPA Technology Transfer training programs dealing with such things as operation and maintenance manuals, cost-benefit analysis, and program planning analysis. Also, specific courses which pertain to the design, operation, and maintenance of wastewater treatment facilities. College courses for career ladder advancement. Specific courses to be taken as needed include: "Technical Writing for Engineers", "Wastewater Treatment and Disposal", "Water Pollution Engineering", "Advanced Wastewater Treatment", "Introduction to Supervision", "Basic Management Functions", and "Construction Quality Management".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Technical Assistant II - Technical Management - 0 (Engineering Technician V)

Duties: Under the direction of the group leader, assists in planning area coordination, project summary, bid documents review, operation and maintenance manual review/certification, and value engineering (plan of study costs). Also assists in the review and certification of such documents as the sewer use ordinance, user charge systems, and industrial cost recovery system. Conducts both interim and final construction inspections. Provides technical assistance and guidance to city officials and consulting engineers. Occasional travel is required.

Education and Experience: College degree in engineering desired but not required. Requires one to two years experience in a position comparable to Technical Assistant I - Technical Management.

Training Requirements (update, upgrade, short courses): A one-week course offering an overview of the construction grants process. Periodic specialized courses dealing with such things as operation and maintenance manuals and program planning analysis. Also, specific courses which pertain to the design, operation, and maintenance of wastewater treatment facilities. College courses for career ladder advancement. Specific courses to be taken as needed include: "Environmental Protection Agency Workshop on Construction Grants", "New Employee Orientation", "Technical Writing for Engineers", "Wastewater Treatment and Disposal", "Water Pollution Engineering", "Advanced Wastewater Treatment", and "General Inspection".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Technical Assistant I - Technical Management P (Engineering Technician IV)

Duties: Under the direction of the group leader and Technical Assistant II - Technical Management, assists in payment requests review, project cost analysis, and project deactivation. Conducts both interim and final construction inspections. Provides technical assistance and guidance to city officials and consulting engineers. Occasional travel is required.

Education and Experience: College degree in engineering desired but not required. Appropriate experience may be substituted for formal education.

Training Requirements (update, upgrade, short courses): A one-week course offering an overview of the construction grants process. Periodic specialized courses which pertain to cost-benefit analysis and the design, operation, and maintenance of wastewater treatment facilities. College courses for career ladder advancement. Specific courses to be taken as needed include: "Environmental Protection Agency Workshop on Construction Grants", "New Employee Orientation", "Wastewater Treatment and Disposal", "Construction Contracts", "Basic Oral and Written Communications", and "Controlling Water Pollution".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Archaeologist - Q (Administrative Tech. III)

Duties: Conducts archaeological surveys at proposed project locations to determine if construction will adversely affect artifacts or relics, if present. Coordinates clearance of proposed sites of construction grant projects with the Texas Historical Commission. Reviews environmental assessments and impact statements. Provides consultation and research services to city officials, consulting engineers, and other persons interested in archaeological clearance of proposed sites of construction grant projects. Frequent travel and field work is required.

Education and Experience: College degree in anthropology with some graduate courses in archaeology desired. One to two years of experience in archaeological field work is desired.

Training Requirements (update, upgrade, short courses): A one-week course offering an overview of the construction grant process. Periodic specialized courses from universities dealing with aspects of archaeology. College courses for career ladder advancement. Specific courses to be taken as needed include: "Environmental Protection Agency Workshop on Construction Grants", "New Employee Orientation", and "Workshop in Environmental Assessments".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Administrative/Quality Control Coordinator - R (Engineering Technician V)

Duties: Supervises secretaries assigned to Construction Grants Section. Assigns administrative work load to assure an orderly and timely flow of applications and normal incoming and outgoing correspondence.

Responsible to insure that projects meet established schedules and to take necessary corrective action on those failing to meet suspense dates. Prepares and internally coordinates administrative operating procedures and follows applicable agency policies. Responsible for the maintenance of the construction grants files and the operation of the file room.

Acts in a staff support capacity to the Chief of the Construction Grants Section and performs any additional duties assigned by him.

Education and Experience: A degree in either Business Administration or Engineering is desired, but not required if offset by experience. A broad and detailed knowledge of the Construction Grants Program, procedures and related activities of the Texas Water Quality Board is required.

Training Requirements (update, upgrade, short courses): Continued upgrade training of all facets of assigned duties to include local university courses, EPA training programs, management, specialized engineering, legal/grants administrative and applicable local and EPA workshops are desired. Specific courses to be taken as needed include: "Project Management", "Environmental Protection Agency

Construction Grants Procurement Process Workshop", "Basic Management Functions", "Accounting Orientation for Administrative, Clerical, and Secretarial Positions", "Automatic Data Processing for Administrative, Clerical, and Secretarial Positions", "Basic Oral and Written Communications", "Environmental Protection Agency Workshop on Construction Grants", and "Construction Quality Management".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Chief Engineer - S (Engineer IV)

Duties: Supervises and directs project engineers in the determination of program compliance on their assigned projects. Maintains overall supervision of technical assistants in the review of such technical documents as engineering studies, facility plans, plans and specifications, and economic studies. Maintains close communication and coordination with the Chief of Grants Management and the Chief of the Construction Grants Section. Assists the Chief of the Construction Grant Section in the development and direction of program policy. Provides consultation to city officials, consulting engineers, and other persons interested in program activities. Conducts both interim and final inspections. Occasional travel is required.

Education and Experience: Registration as a professional engineer is required. At least five years of experience in the design of civil/sanitary facilities is desired. Broad and detailed knowledge of the construction grants program and related activities of the Texas Water Quality Board is required.

Training Requirements (update, upgrade, short courses): Periodic specialized courses from universities and EPA Technology Transfer training programs dealing with such things as operation and maintenance manuals, facility plans, and infiltration/inflow analyses. Periodi short courses in management techniques. Specific courses to be taken as needed include: "Environmental Protection Agency Workshop on Construction Grants", "Wastewater Treatment and Disposal", "Engineering Management", "Advanced Water Pollution Control:

Physical and Chemical Waste Treatment", "Advanced Water Pollution Control - Biological", "Technical Writing for Engineers", "Effective Technical Presentations", "Project Management", "Advanced Wastewater Treatment", and "ADP Orientation for the User".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Project Engineer - T (Engineer I - III)

Duties: Primary responsibility for determining program compliance on assigned projects. Reviews such technical documents as engineering studies, facility plans, plans and specifications, and economic studies. Provides consultation to city officials, consulting engineers, and other persons interested in program activities. Conducts both interim and final construction inspections. Occasional travel is required.

Education and Experience: Registration as a professional engineer is required. At least two years of experience in the design of civil/sanitary facilities is desired.

Training Requirements (update, upgrade, short courses): Periodic specialized courses from universities and EPA Technology Transfer training programs dealing with such things as operation and maintenance manuals, facility plans, and infiltration/inflow analyses. Periodic short courses in management techniques. Specific courses to be taken as needed include: "Environmental Protection Agency Workshop on Construction Grants", "Workshop in Environmental Assessment", "Wastewater Treatment and Disposal", "Urban Stormwater Management Seminar", "Project Management and Control Workshop", "Technical Writing for Engineers", "New Employee Orientation", "Effective Technical Communications", "Advanced Wastewater Treatment", "Water Pollution Engineering", "ADP Orientation for the User", "Advanced Water Pollution Control: Physical and Chemical Waste Treatment", "Construction Quality Management", "Value

Engineering Study Workshop", "Construction Contracts", "Engineering Management", "Advanced Water Pollution Control - Biological", and "Concrete Inspection".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Secretary II - U (Secretary III)

Duties: Types complex reports, letters, and other documents. Maintains records and takes dictation. Typing 65-75 wpm, shorthand 75-85 wpm. Analyzes and routes incoming mail. Approves and signs requisitions, vouchers, and other routine documents for the supervisor.

Education and Experience: High school graduate with major in secretarial science. Good knowledge of business English, spelling, and punctuation is required. One year of experience in a secretarial position is required.

Training Requirements (update, upgrade, short courses): A one-week course offering an overview of the construction grant process. Periodic short courses in secretarial science. College courses for career ladder advancement. Specific courses to be taken as needed include: "New Employee Orientation", "Environmental Protection Agency Workshop on Construction Grants", "Better Office Skills and Practices", "Executive Secretary Seminar", "Shorthand Refresher", and "Controlling Water Pollution".

Function: Municipal Wastewater Treatment Construction Grants

Occupational Title and Code: Secretary I - V (Secretary II)

Duties: Types complex reports, letters, and other documents. Maintains records and takes dictation. Typing 55-65 wpm, shorthand 65-75 wpm. Analyzes and routes incoming mail.

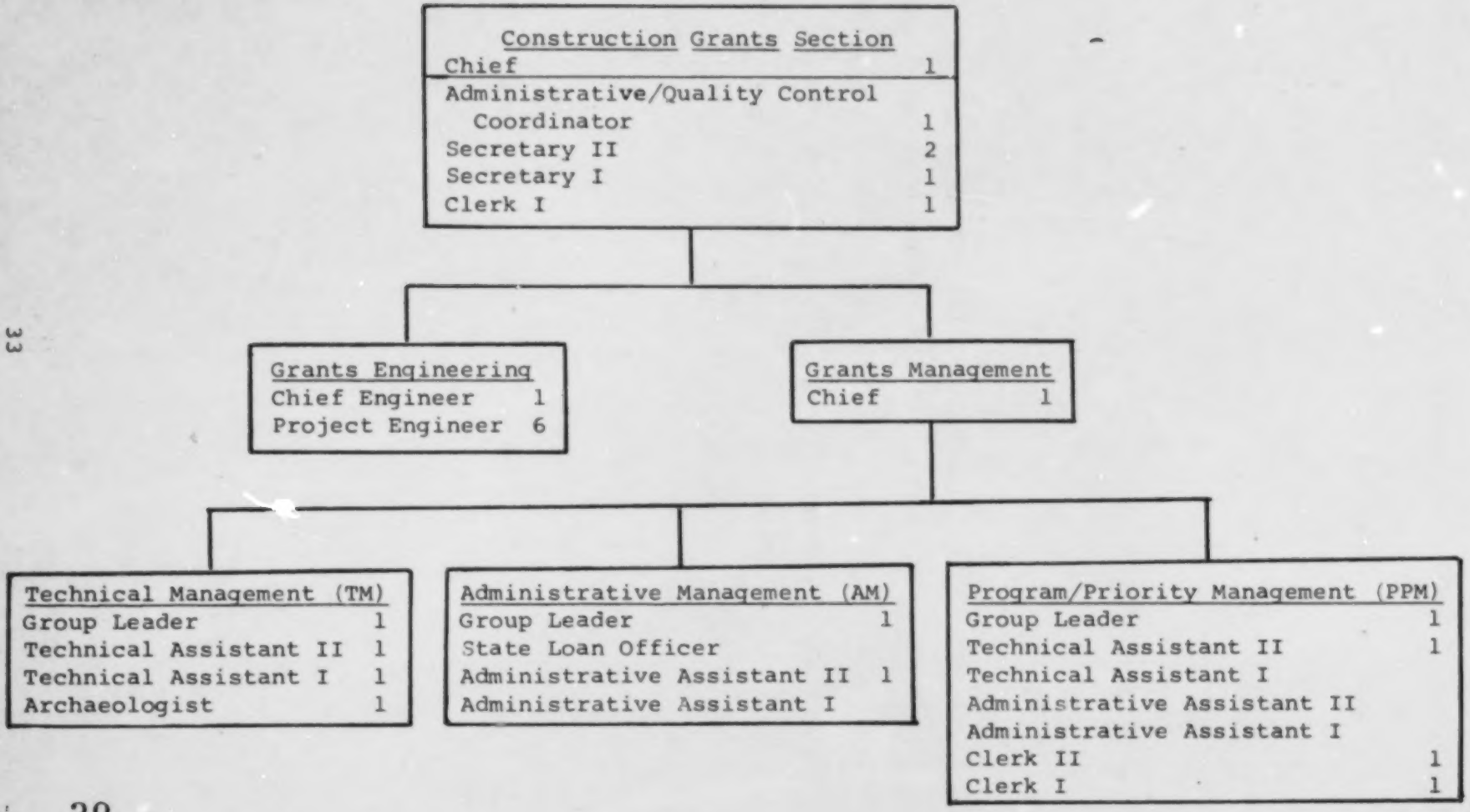
Education and Experience: High school graduate with major in secretarial science. Good knowledge of business English, spelling, and punctuation is required.

Training Requirements (update, upgrade, short courses): A one-week course offering an overview of the construction grant process. Periodic short courses in secretarial science. College courses for career ladder advancement. Specific courses to be taken as needed include: "New Employee Orientation", "Environmental Protection Agency Workshop on Construction Grants", "Basic Oral and Written Communications", "Office Practices", "Secretarial Techniques", and "Controlling Water Pollution".

Prepared by H. Voigt
T. Jackson

Date 6-22-77

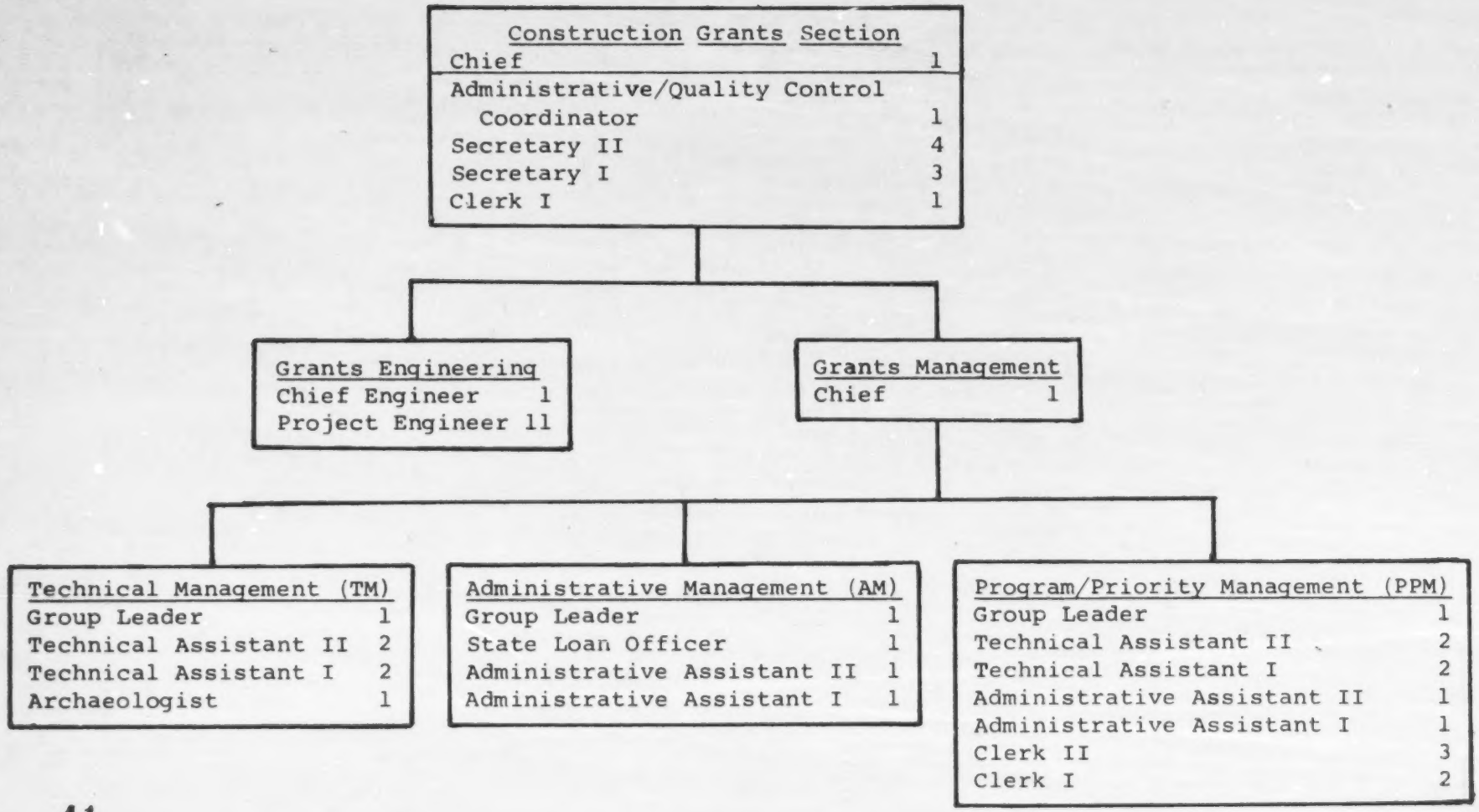
ORGANIZATION CHART
CONSTRUCTION GRANTS SECTION
JUNE, 1977
(AUTHORIZED POSITIONS SHOWN)



H. Voigt
Prepared by T. Jackson

Date 6-22-77

ORGANIZATION CHART
CONSTRUCTION GRANTS SECTION
FY 78 (TO MEET $200M WORKLOADS)



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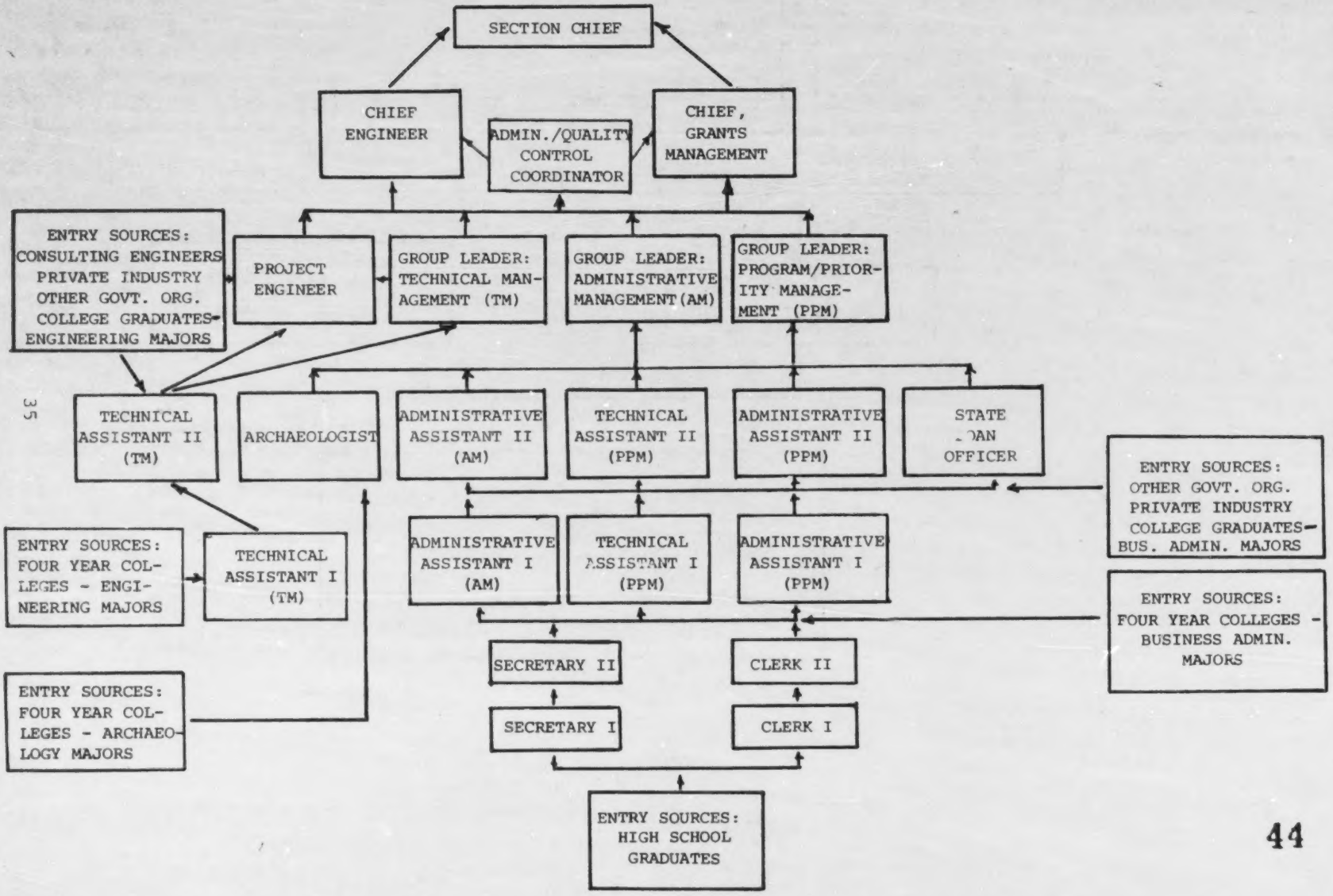
Prepared by H. Voigt
T. Jackson

Date 6-22-77

CAREER LADDER
CONSTRUCTION GRANTS SECTION


SECTION CHIEF
CHIEF ENGINEER
ADMIN./QUALITY CONTROL COORDINATOR
CHIEF, GRANTS MANAGEMENT
ENTRY SOURCES: CONSULTING ENGINEERS PRIVATE INDUSTRY OTHER GOVT. ORG. COLLEGE GRADUATES-ENGINEERING MAJORS
PROJECT ENGINEER
GROUP LEADER: TECHNICAL MANAGEMENT (TM)
GROUP LEADER: ADMINISTRATIVE MANAGEMENT (AM)
GROUP LEADER: PROGRAM/PRIORITY MANAGEMENT (PPM)
TECHNICAL ASSISTANT II (TM)
ARCHAEOLOGIST
ADMINISTRATIVE ASSISTANT II (AM)
TECHNICAL ASSISTANT II (PPM)
ADMINISTRATIVE ASSISTANT II (PPM)
STATE LOAN OFFICER
ENTRY SOURCES: OTHER GOVT. ORG. PRIVATE INDUSTRY COLLEGE GRADUATES-BUS. ADMIN. MAJORS
ENTRY SOURCES: FOUR YEAR COLLEGES - ENGINEERING MAJORS
TECHNICAL ASSISTANT I (TM)
ADMINISTRATIVE ASSISTANT I (AM)
TECHNICAL ASSISTANT I (PPM)
ADMINISTRATIVE ASSISTANT I (PPM)
ENTRY SOURCES: FOUR YEAR COLLEGES - BUSINESS ADMIN. MAJORS
SECRETARY II
CLERK II
ENTRY SOURCES: FOUR YEAR COLLEGES - ARCHAEOLOGY MAJORS
SECRETARY I
CLERK I
ENTRY SOURCES: HIGH SCHOOL GRADUATES

IV. QUANTITATIVE CRITERIA

TABLE OF TIME FACTORS

Construction Grant Activity	Travel Time Factor	Estimated & Allowed Times*(manhours) in specific cost categories for each step (cost of step). *See Footnote 1.									
		0 to $25,000		25k to 100k		100K to 250k		250k to 1M		>1M	
I. Direct Project Activities		EST.	ALL.								
A. Step 1											
1. Pre-Application Act. and conf.		4.0	4.56	4.0	4.56	4.0	4.56	4.0	4.56	4.0	4.56
2. Application Review											
a. Admin. Review		3.0	3.42	3.0	3.42	3.5	3.99	4.0	4.56	4.0	4.56
b. Review of Plan of Study		4.0	4.56	4.0	4.56	4.0	4.56	5.0	5.70	6.0	6.84
c. Planning Area of Coordination		4.0	4.56	4.0	4.56	4.0	4.56	4.0	4.56	6.0	6.84
3. Facility Plan Review											
a. I/I Analysis		15	17.1	15	17.1	20	22.8	20	22.8	40	45.6
b. SSES		10	11.4	12	13.68	15	17.1	15	17.1	20	22.8
c. Env. Assessment		5.0	5.7	5.0	5.7	7.0	7.98	10.0	11.4	10.0	11.4
d. Cost Effective Analysis		6.0	6.84	6.0	6.84	8.0	9.12	10.0	11.4	15.0	17.1
e. Sub-Agreements		2.0	2.28	2.0	2.28	2.0	2.28	4.0	4.56	4.0	4.56
f. Value Engineer Proposal	.15	0	0	4.0	5.16	4.0	5.16	6.0	7.74	6.0	7.74
g. Other Elements of Plan		30.0	34.2	30.0	34.2	30.0	34.2	45.0	51.3	60.0	68.4
(1) Flood Hazard Analysis WDR, IBC, COE Coordination											
(2) Bypassing Analysis											
(3) Eligibility Determination											
(4) Evaluate Reasonableness of Eng. Fees											
(5) Evaluate Design Criteria											
(6) Compatability with I/I Analysis and/or SSES											
(7) Design Population & Industrial PE projections											
(8) Compatability with Inf. in Central Files											
(9) Aerating Evaluation											
(10) Evaluate Appropriateness of Discharge Permit											
(11) Evaluate Appropriateness of Public Hearing											
(12) Conferences											

Construction Grant Activity	Travel Time Factor	Estimated and Allowed Times (manhours) in specific cost categories for each step (cost of step).									
(Step 1 continued)		0 to $25,000		25K to 100K		100K to 250K		250K to 1M		>1M	
		EST.	ALL.								
4. O+M Evaluation Report		2.0	2.28	2.0	2.28	2.0	2.28	4.0	4.56	4.0	4.56
5. Develop Plan of UCS/ICR with Schedule of Implementation		2.0	2.28	2.0	2.28	2.0	2.28	4.0	4.56	4.0	4.56
6. Letter of Intent for Industry		1.0	1.14	1.0	1.14	1.0	1.14	1.0	1.14	1.0	1.14
7. Preliminary P of O (PRM 77-3)		4.0	4.56	4.0	4.56	4.0	4.56	6.0	6.84	8.0	9.12
8. Archaeological Clearance	.25	12.0	16.68	15.0	20.85	16.0	20.24	16.0	22.24	16.0	22.24
9. General Project Management											
a. Grants Accounting System		8.0	9.12	8.0	9.12	6.0	6.84	6.0	6.84	6.0	6.84
b. Administrative Inspections	.5	6.0	9.84	6.0	9.84	6.0	9.84	8.0	13.12	15.0	24.6
c. Permit/Enf. Coordination		2.0	2.28	2.0	2.28	2.0	2.28	4.0	4.56	4.0	4.56
10. Grant Increases		8.0	9.12	8.0	9.12	8.0	9.12	12.0	13.68	12.0	13.68
11. Time Extensions		8.0	9.12	8.0	9.12	8.0	9.12	12.0	13.68	12.0	13.68
12. Payment Requests		8.0	9.12	8.0	9.12	8.0	9.12	12.0	13.68	12.0	13.68
13. Inquiry Response (Limited to Municipalities)	.15	30.0	38.7	36.0	46.44	40.0	51.6	48.0	61.92	60.0	77.4
Total Manhours/Step I		174	208.86	189	228.21	204.5	246.73	260	312.5	329	396.44
Total Mandays/Step I		21.75	26.11	23.63	28.53	25.56	30.84	32.5	39.07	41.13	49.56

Construction Grant Activity	Travel Time Factor	Estimated and Allowed Times (manhours) in specific cost categories for each step (cost of step).									
		0 to $50,000		50K to 200K		200K to 500K		500K to 2M		>2M	
B. Step 2		EST.	ALL.								
1. Application Review		3.0	3.42	3.0	3.42	3.0	3.42	5.0	5.7	8.0	9.12
2. Sub-Agreements		2.0	2.28	2.0	2.28	4.0	4.56	6.0	6.84	8.0	9.12
3. Approve P & S		34.0	38.76	34.0	38.76	40.0	45.6	60.0	68.4	75.0	85.5
4. Determination of Employment of Chief Operator		1.0	1.14	1.0	1.14	1.0	1.14	1.0	1.14	1.0	1.14
5. Review and Approve Addendas		5.0	5.7	5.0	5.7	5.0	5.7	10.0	11.4	15.0	17.1
6. Value Engineering Analysis	.15	0	0	28.0	36.12	28.0	36.12	35.0	45.15	56.0	72.24
7. Wage Rates		2.5	2.85	2.5	2.85	2.5	2.85	5.0	5.7	10.0	11.4
8. "In Progress" Design Reviews	.15	30.0	43.2	30.0	43.2	30.0	43.2	45.0	58.05	60.0	77.4
9. Advise Grantee of New and/or Ignored State and Federal Requirements		1.0	1.14	1.0	1.14	1.0	1.14	2.0	2.28	4.0	4.56
10. Final P of O (PRM 77-3)		4.0	4.56	4.0	4.56	4.0	4.56	6.0	6.84	8.0	9.12
11. General Project Management											
a. Grants Accounting System		8.0	9.12	8.0	9.12	6.0	6.84	6.0	6.84	6.0	6.8
b. Administrative Inspections	.50	6.0	9.84	6.0	9.84	6.0	9.84	8.0	13.12	15.0	24.6
c. Permit/Enf. Coordination		2.0	2.28	2.0	2.28	2.0	2.28	4.0	4.56	4.0	4.56
12. Grant Increases		8.0	9.12	8.0	9.12	8.0	9.12	12.0	13.68	12.0	13.68
13. Time Extensions		8.0	9.12	8.0	9.12	8.0	9.12	12.0	13.68	12.0	13.68
14. Payment Requests		8.0	9.12	8.0	9.12	8.0	9.12	12.0	13.68	12.0	13.68
15. Inquiry Response (Limited to Municipalities)	.15	30.0	38.70	36.0	46.44	40.0	51.6	48.0	61.92	60.0	77.4
Total Manhours/Step 2		152.5	190.35	186.5	234.21	196.5	246.21	277	338.98	366	451.14
Total Mandays/Step 2		19.06	23.79	23.31	29.28	24.56	30.78	34.63	42.38	45.76	56.4

Construction Grants Activity	Travel Time Factor	Estimated and Allowed Times (manhours) in Specific Cost Categories for Each Step (Cost of Step).									
		0 to $500,000		500K to 2M		2M to 5M		5M to 20M		>20M	
		EST.	ALL.								
C. Step 3											
1. Application Review		2.0	2.28	2.0	2.28	4.0	4.56	6.0	6.84	9.0	10.26
2. Sub-Agreements		2.0	2.28	2.0	2.28	4.0	4.56	4.0	4.56	6.0	6.84
3. Approve Contract Documents		4.0	4.56	6.0	6.84	8.0	9.12	12.0	13.68	20.0	22.8
a. Executed Contract Documents		4.0	4.56	6.0	6.84	8.0	9.12	12.0	13.68	20.0	22.8
4. Approve Draft O&M Manual		3.0	3.42	3.0	3.42	4.0	4.56	6.0	6.84	6.0	6.84
5. Final O&M Manual		3.0	3.42	3.0	3.42	4.0	4.56	6.0	6.84	6.0	6.84
6. Interim Inspections	.50	16.0	26.24	16.0	26.24	20.0	32.8	24.0	39.36	32.0	52.48
7. Approve Draft UCS/ICR		4.0	4.56	4.0	4.56	4.0	4.56	6.0	6.84	8.0	9.12
8. Approve Final UCS/ICR		3.0	3.42	3.0	3.42	3.0	3.42	4.0	4.56	6.0	6.84
9. Approve Draft SUO		3.0	3.42	3.0	3.42	3.0	3.42	4.0	4.56	4.0	4.56
10. Approve Final SUO		2.0	2.28	2.0	2.28	2.0	2.28	3.0	3.42	3.0	3.42
11. Final Construction Inspec.	.50	8.0	13.12	8.0	13.12	12.0	19.68	15.0	24.6	20.0	32.8
12. "Start Up" Proposal	.15	8.0	13.12	8.0	13.12	12.0	19.68	15.0	24.6	20.0	32.8
13. General Project Management											
a. Grants Accounting System		8.0	9.12	10.0	11.4	12.0	13.68	15.0	17.1	20.0	22.8
b. Permit/Enf. Coordination		2.0	2.28	2.0	2.28	4.0	4.56	4.0	4.56	4.0	4.56
14. Grant Increases		8.0	9.12	8.0	9.12	8.0	9.12	12.0	13.68	12.0	13.68
15. Time Extensions		8.0	9.12	8.0	9.12	8.0	9.12	12.0	13.68	12.0	13.68
16. Payment Requests		12.0	13.68	12.0	13.68	12.0	13.68	12.0	13.68	15.0	17.1
17. Review and Approve Change Orders		12.0	13.68	12.0	13.68	15.0	17.1	20.0	22.68	30.0	34.2
18. Inquiry Response (Limited to Municipalities)	.15	30.0	38.7	36.0	46.44	40.0	51.6	48.0	61.92	60.0	77.1
Total Manhours/Step 3		142	182.38	154	196.96	187	241.18	240	307.8	313	401.52
Total Mandays/Step 3		17.75	22.8	19.25	24.63	23.38	30.15	30.01	38.48	39.13	50.19

Construction Grant Activity	Travel Time Factor	Estimated and Allowed Times (Per Year) ($200M Workloads)			
		ESTIMATED		ALLOWED	
II. Indirect Activities		Manhours	Mandays	Manhours	Mandays
A. Supervision					
1. Section Chief		1174	146.7	1301.6	162.7
2. Grants Management Chief		782	97.8	892	111.5
a. Group Leader - Program/Priority Management		391	48.9	445.6	55.7
b. Group Leader - Administrative Management		391	48.9	445.6	55.7
c. Group Leader - Technical Management		391	48.9	445.6	55.7
3. Chief Engineer		782	97.8	892	111.5
B. Project Monitoring (Mang. Info. System)					
1. Project Scheduling		700	87.5	798	99.8
2. Fund Management		960	120	1094	136.8
3. Workload Projections		240	30	273.6	34.2
4. Records Maintenance		3130	391.2	3568	446
5. Project Close-Out		240	30	273.6	34.2
6. Management of System		960	120	1094	136.8
C. Special Studies or Projects; (EPA/GAO/OMB Surveys, Requests From Front Office, Legislative or Congressional Inquiries).	.15	700	87.5	903.2	112.9
D. Priority Rating System					
1. Pre-rating Inspection Evaluation		400	50	456	57
2. Informational Data Requests		400	50	456	57
3. Project Eligibility/Project Action		960	120	1094.4	136.8
4. Management of System		1200	150	1368	171
E. Budget Planning, State Program Plan, Program Evaluation, Manpower Planning		720	90	820.8	102.6
F. Needs Survey		2248	281	2560	320
G. State Loan Program		1565	195.6	1784	223
H. Administrative/Quality Control Coordinator		1565	195.6	1784	223
I. Secretarial Support					
1. Section Chief		1565	195.6	1784	223
2. Grants Management Chief		1565	195.6	1784	223
a. Program/Priority Management Group		1565	195.6	1784	223
b. Administrative Management Group		1565	195.6	1784	223
c. Technical Management Group		1565	195.6	1784	223
3. Chief Engineer and Project Engineers		3130	391.2	3568	446
J. Clerical Support (Included in Individual Tasks and Items Under Direct and Indirect Activities)					
Total for Indirect Activities		30,854	3,856.6	35,238	4,404.9

FOOTNOTE 1

Estimated Time = time required to accomplish the activity by an average person with no delays or interruptions

Allowed Time = estimated time plus allowances for non-productive time: travel, administrative activities, delays, and personal matters. Allowed time used in calculating quantitative manpower requirements.

Percent of Workday Consumed by Non-Productive Activities:

*1. Administrative Activities (meetings, time and leave reports, travel vouchers, monthly reports) (30 min. per day);

30 ÷ 480 min. per day = 6%

*2. Delays (10 min. per day); 10 ÷ 480 min. per day = 2%

*3. Personal Matters (30 min. per day);
30 ÷ 480 min. per day = 6%

**4. Travel - figured separately for each activity

*Total time percentage for these non-productive activities applied to each construction grant activity.

**(a) Figure travel time by first applying travel time factor to estimated time. (b) Then apply percentages for administrative activities, delays, and personal matters to estimated time. (c) Add a and b to the estimated time to get the total allowed time for the activity. Example: I, A, 3, f, page 1, "Value Engineer Proposal" for the $25,000 to $100,000 cost category.

(a) 4.0 (estimated time) x .15 (travel time factor) = .60

(b) 4.0 (estimated time) x .14 (time factor for administrative activities, delays, and personal matters) = .56

(c) .60 + .56 + 4.0 = 5.16 (total allowed time)

STAFFING GUIDE

FUNCTION: Municipal Wastewater Treatment Construction Grants

Prepared By: H. Voigt, T. Jackson

Date: 6-24-77

WORKLOAD INDICATOR: Number of Workyears Derived from Awards, Active Projects, and Additional Activities

SOURCE OF WORKLOAD INDICATOR: Funding Level

OCCUPATIONAL TITLE	CODE	QUANTITATIVE PERSONNEL REQUIREMENTS			
		Increments of Workload Indicator			
		$150 M	$200 M	$250 M	$300 M
Section Chief	A	1	1	1	1
Chief, Grants Mgmnt.	B	1	1	1	1
Group Leader, Program/ Priority Mgmnt. (PPM)	C	1	1	1	1
Administrative Assistant II (PPM)	D	1	1	2	3
Administrative Assistant I (PPM)	E	0	1	1	2
Clerk II	F	3	3	4	4
Clerk I	G	2	3	4	5
Technical Assistant II (PPM)	H	1	2	3	3
Technical Assistant I (PPM)	I	2	2	2	3
State Loan Officer	J	1	1	1	1
Group Leader: Admin. Managment (AM)	K	1	1	1	1
Administrative Assistant II (AM)	L	1	1	1	2
Administrative Assistant I (AM)	M	0	1	2	2
Group Leader - Tech. Mgmnt. (TM)	N	1	1	1	1
Technical Assistant II (TM)	O	1	2	3	3
Technical Assistant I (TM)	P	2	2	2	3
Archaeologist	Q	1	1	2	2
Admin./Quality Control Coor.	R	1	1	1	1
Chief Engineer	S	1	1	1	1
Project Engineer	T	8	11	14	16
Secretary II	U	3	4	4	4
Secretary I	V	3	3	4	5
TOTAL		36	45	56	65

INSTRUCTIONS FOR DETERMINING QUANTITATIVE/QUALITATIVE MANPOWER REQUIREMENTS

Step 1 - Define Workloads

This involved devising a workload structure in terms of the step or type of project (planning, construction) and the size range of each step in terms of the cost. A method was developed to forecast the number of projects within each cost category of each step in the planning period (FY 78). Workloads were defined for four possible funding levels: $150 million; $200 million; $250 million; $300 million.

Step 2 - Apply Criteria in Calculating Quantitative Manpower Requirements

The total number of workyears or people needed is determined by entering the workloads and time estimates into a calculation process. (See Calculation Sheets, p. 50.) As a $200 million funding level was anticipated for FY 78, this was used in the workload level in the calculation process.

Step 3 - Develop Staffing Plan

The staffing plan is developed for purposes of relating numbers to types of personnel needed. The mix of people is determined by relating the number of workyears which was calculated in the previous step to that column on the "Staffing Guide" (p.43) which approximates the calculated quantity of workyears. The suggested mix of personnel on the "Staffing Guide" can be adjusted

by management on the basis of existing utilization practices. If the staffing guide does not present a suggested mix of people for the quantity of work-years determined in Step 2, then the number of different types of people needed must be interpolated. For example, if the calculated quantity of workyears is not represented on the "Staffing Guide", the mix of people is determined by using those two columns which are on the high and low sides of the calculated quantity of workyears.

Note: A quick estimate of the number of types of people needed can be obtained by using the funding level on the workload indicator. For example, if the anticipated funding level is $175 million, the mix of people should be determined by interpolating between the $150 million and $200 million columns.

FUNCTION: Municipal Wastewater Treatment Construction Grants

Prepared by H. Voigt, T. Jackson

Date June 24, 1977

WORKLOADS
(Derived from Funding Level)

Cost Categories for Each Step (Cost of Step)	WORKLOADS (Number of Project Starts)			
	FUNDING LEVEL			
	150M	200M	250M	300M
Total Project Starts	155	190	240	285
STEP 1	80	90	115	135
0 to 25k	40	45	58	68
25k to 100k	24	27	35	41
100k to 250k	11	12	15	18
250k to 1M	4	5	6	7
>1M	1	1	1	1
STEP 2	45	60	75	90
0 to 50k	25	34	43	52
50k to 200k	13	17	21	25
200k to 500k	3	4	5	6
500k to 2M	3	4	5	6
>2M	1	1	1	1
STEP 3	30	40	50	60
0 to 500k	11	15	19	23
500k to 2M	10	13	17	20
2M to 5M	4	6	7	8
5M to 20M	3	4	4	5
>20M	2	2	3	4

METHOD FOR DETERMINING NUMBER OF STEPS IN SPECIFIC COST CATEGORIES (BASED ON FUNDING LEVEL)

The project mix (numbers, types, and sizes of construction projects) is based upon past experience. This mix is expected to continue, but eventually, a system should be developed using the needs survey and the Grants Information Control System (GICS) file which will provide specific project schedules.

The approach used in this report for determining project workloads is described in the following paragraphs. This approach assumes a general flow of projects from one year to the next, thus creating relatively stable workloads from year to year. That is, for each step of a particular cost category ending at some time during the fiscal year, there is a new project in the same step and cost category beginning.

The first step is to multiply the expected allocation, less a reserve of approximately 15%, by the percentage of money to be applied to Step 1 projects. This percentage is based upon historical data of the distribution of money into each of the three steps.

170M (200M allocation - 15%) x 4.67 (percentage of money to be applied to Step 1 projects = $7,939,000

Next, divide the total funding for Step 1 by the average historical cost of a Step 1 project. This results in the number of Step 1 projects.

$7,939,000 ÷ $87,295 = 90

Next, apply the following ratios to get the number of Step 2 and Step 3 projects:

Step 1-2 . . . . . 1.5
Step 2-3 . . . . . 1.5

90 (No. of Step 1 projects) ÷ 1.5 = 60 No. of Step 2 projects

60 (No. of Step 2 projects) ÷ 1.5 = 40 No. of Step 3 projects

Next, using the average historical cost of Step 2 and Step 3 projects, and the number of Step 2 and Step 3 projects, calculate the total costs for Step 2 and Step 3.

$138,770 (Avg. cost for Step 2) x 60 (No. of Step 2 projects) = $8,326,200

$3,747,625 (Avg. cost for Step 3) x 40 (No. of Step 3 projects) = $149,905,000

Add the total costs for all three steps and compare this total with the funding level.

$ 7,939,000	Step 1
8,326,200	Step 2
149,905,000	Step 3

Total Funding = $170,000,000 Total Costs = $166,170,200*

*The additional $3,829,800 is added to the 15% reserve.

If the total costs exceeds the total funding, minor adjustments can be made in the number of each of the three steps. For example, if the total costs exceed the total funding by approximately $50,000, the number of Step 2 projects is reduced by one and the number of Step 1 projects is increased by one.

To determine the distribution of projects into specific cost categories, apply the following percentages. These percentages were calculated using historical cost-of-step data from October of 1972 to the present.

Step 1

Cost Category	% of Total No.
0-25k	51
25k-100k	30
100k-250k	12
250k-1M	6
>1M	+ 1
	100

Step 2

Cost Category	% of Total No.
0-50k	62
50k-200k	27
200k-500k	5
500k-2M	5
>2M	+ 1
	100

Step 3

Cost Category	% of Total No.
0-500k	38
500k-2M	34
2M-5M	13
5M-20M	10
>20M	+ 5
	100

Example:

90 (Total Step 1 projects)

90 x .51 = 45 Step 1 projects in 0-25k cost category
90 x .30 = 27 Step 1 projects in 25k-100k cost category
90 x .12 = 12 Step 1 projects in 100k-250k cost category
90 x .06 = 5 Step 1 projects in 250k-1M cost category
90 x .01 = 1 Step 1 projects in >1M cost category
+90

CALCULATION SHEETS

Funding Level $200 M FY 78

I. Direct Project Activities

A. Total Step 1 Workload (Allowed Time) = 2,560.25

1. 45 (0 to 25K) x 26.11 workdays = 1,174.95
2. 27 (25K to 100K) x 28.53 workdays = 770.31
3. 12 (100K to 250K) x 30.84 workdays = 370.08
4. 5 (250K to 1M) x 39.07 workdays = 195.35
5. 1 (>1M) x 49.56 workdays = 49.56

Total Workyears for Step 1 =

2,560.25 ÷ 223* = 11.48 = 12

*See Footnote 1

B. Total Step 2 Workload (Allowed Time) = 1,655.66

1. 34 (0 to 50K) x 23.79 workdays = 808.86
2. 17 (50K to 200K) x 29.28 workdays = 497.76
3. 4 (200K to 500K) x 30.78 workdays = 123.12
4. 4 (500K to 2M) x 42.38 workdays = 169.52
5. 1 (>2M) x 56.4 workdays = 56.40

Total Workyears for Step 2 =

1,655.66 ÷ 223 = 7.42 = 8

C. Total Step 3 Workload (Allowed Time) = 1,097.39

1.	15	(0 to 500K)	x	22.8	workdays	=	342.00
2.	13	(500K to 2M)	x	24.63	workdays	=	320.19
3.	6	(2M to 5M)	x	30.15	workdays	=	180.90
4.	4	(5M to 20M)	x	38.48	workdays	=	153.92
5.	2	(> 20M)	x	50.19	workdays	=	100.38

Total Workyears for Step 3 =

1,097.39 ÷ 223 = 4.92 = 5

II. Indirect Activities (Allowed Time-Workdays) = 4,404.90

A.	Supervision	= 552.80
B.	Project Monitoring	= 887.80
C.	Special Studies or Projects	= 112.90
D.	Priority Rating System	= 421.80
E.	Budget Planning, etc.	= 102.60
F.	Needs Survey	= 320.0
G.	State Loan Program	= 223.0
H.	Administrative/Quality Control Coordinator	= 223.0
I.	Secretarial Support	= 1,561.0

Total Workyears for Indirect Activities

= 4,404.90 ÷ 223 = 19.7 = 20

III. Total Workyears = 45

I. Direct Project Activities

A.	Step 1 Projects	= 12
B.	Step 2 Projects	= 8
C.	Step 3 Projects	= 5

II. Indirect Activities = 20

FOOTNOTE 1

*The number of workdays available to an individual in one year is 223. This number is derived by using the following procedure:

Assigned Time

5 days per week per man for 1 year = 52 weeks

x 5 days = 260 mandays with 8 hours in each day

Non-Available Time

Days	Category
12	Vacation
12	Holidays
8	Sick Leave
+5	Training
37	

Available Time = 260 - 37 = 223 Days

STAFFING PLAN

Organization Construction Grants — Prepared by H. Voigt / T. Jackson

Time Period June 1, 1977-Sept. 1, 1979 — Date June 24, 1977

Funding Level $200M

Occupational Title	Code	Type	Pay Plan	Grade*	Planned Positions & Manyears					
					FY 77		FY 78		FY 79	
					Pos.	M.Y.	Pos.	M.Y.	Pos.	M.Y.
Section Chief	A	P	S	21	1	1	1	1	1	1
Chief, Grants Management	B	P	S	20	1	1	1	1	1	1
Group Leader: (PPM)	C	P	S	17	1	1	1	1	1	1
Administrative Assistant II-(PPM)	D	P	S	12			1	.5	1	1
Administrative Assistant I-(PPM)	E	P	S	10			1	1	1	1
Clerk II	F	P	S	06	1	1	3	2	3	3
Clerk I	G	P	S	04	2	2	3	3	3	3
Technical Assistant II - (PPM)	H	P	S	14	1	1	2	1.5	2	2
Technical Assistant I - (PPM)	I	P	S	12			2	1.5	2	2
State Loan Officer	J	P	S	14			1	1	1	1
Group Leader: (AM)	K	P	S	16	1	1	1	1	1	1
Administrative Assistant II-(AM)	L	P	S	12	1	1	1	1	1	1
Administrative Assistant I-(AM)	M	P	S	08			1	.5	1	1
Group Leader: (TM)	N	P	S	19	1	1	1	1	1	1
Technical Assistant II - (TM)	O	P	S	18	1	1	2	1.5	2	2
Technical Assistant I - (TM)	P	P	S	15	1	1	2	1.5	2	2
Archaeologist	Q	P	S	13	1	1	1	1	1	1
Administrative/Quality Control Coordinator	R	P	S	18	1	1	1	1	1	1
Chief Engineer	S	P	S	20	1	1	1	1	1	1

*Maximum pay grade or group shown.

See Footnote 1 for salaries.

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STAFFING PLAN

Organization Construction Grants Prepared by _____

Time Period _____ Date _____

Funding Level _____

Occupational Title	Code	Type	Pay Plan	Grade*	Planned Positions & Manyears					
					FY 77		FY 78		FY 79	
					Pos.	M.Y.	Pos.	M.Y.	Pos.	M.Y.
Project Engineer	T	P	S	19	5	5	5	5	5	5
	T	IPA	IPA	19	1	1	1	1	1	1
	T	P	S	18			5	3.5	5	5
Secretary II	U	P	S	07	2	2	4	4	4	4
Secretary I	V	P	S	05	1	1	3	3	3	3
Total Permanent					23	23	44	38.5	44	44
Total Interagency Personnel Act					1	1	1	1	1	1
GRAND TOTAL					24	24	45	39.5	45	45

FOOTNOTE I

SALARIES

OCCUPATIONAL TITLE	CODE	Planned Positions and Salaries*					
		FY 77		FY 78		FY 79	
		POS.	Total Salaries	POS.	Total Salaries	POS.	Total Salaries
Section Chief	A	1		1		1	
Chief, Grants Management	B	1		1		1	
Group Leader: (PPM)	C	1		1		1	
Administrative Assistant II - (PPM)	D			1		1	
Administrative Assistant I - (PPM)	E			1		1	
Clerk II	F	1		3		3	
Clerk I	G	2		3		3	
Technical Assistant II - (PPM)	H	1		2		2	
Technical Assistant I - (PPM)	I			2		2	
State Loan Officer	J			1		1	
Group Leader - (AM)	K	1		1		1	
Administrative Assistant II - (AM)	L	1		1		1	
Administrative Assistant I - (AM)	M			1		1	
Group Leader - (TM)	N	1		1		1	
Technical Assistant II - (TM)	O	1		2		2	
Technical Assistant I - (TM)	P	1		2		2	
Archaeologist	Q	1		1		1	
Administrative/Quality Control Coordinator	R	1		1		1	
Chief Engineer	S	1		1		1	
Project Engineer	T	6		11		11	
Secretary II	U	2		4		4	
Secretary I	V	1		3		3	
TOTALS		24		45	$704,556	45	$728,976

*Salaries are calculated by multiplying the number of positions by the maximum pay grade or group for that position. Salaries for positions in existence prior to September 1, 1977, are figured at present pay step. Vacancies and positions created by staff expansion are figured at step 3 for pay group 12 and below and step 5 for those positions above pay group 12.

V. TRAINING CRITERIA

CONSTRUCTION GRANTS SECTION

Relation of Applicable Training* Courses to Each Occupation

Prepared by H. Voigt, T. Jackson

Date 6-20-77

CODE	OCCUPATION	3	4	2	3	7	9	4	12	1	1	2	8	3	11	4	4	4	5	19	1	TOTAL
A	Section Chief				X							X	X				X	X		X		
B	Chief, Grants Management						X						X			X	X	X		X		
C	Group Leader-Program/Priority Mgmnt.						X	X	X							X				X		
D	Administrative Assistant II - PPM					X			X						X	X				X		
E	Administrative Assistant I - PPM					X			X						X	X				X		
F	Clerk II					X	X		X						X					X		
G	Clerk I					X	X		X						X					X		
H	Technical Assistant II - PPM	X					X		X						X					X		
I	Technical Assistant I - PPM	X					X		X						X					X		
J	State Loan Officer											X	X						X	X		
K	Group Leader - AM						X	X					X						X			
L	Administrative Assistant II - AM					X			X				X		X				X	X		
M	Administrative Assistant I - AM					X			X				X		X				X	X		
N	Group Leader - TM		X					X						X						X		
O	Technical Assistant II - TM		X																	X		
P	Technical Assistant I - TM								X				X		X					X		
Q	Archaeologist																			X		
R	Administrative/Quality Control Coord.	X				X		X	X					X					X	X		
S	Chief Engineer		X	X	X		X										X	X		X		
T	Project Engineer		X	X	X		X				X		X	X			X	X		X		
U	Secretary II									X					X					X	X	
V	Secretary I								X						X					X		

*Refer to the following training catalog for the source, duration, and cost of each training course.

CONSTRUCTION GRANTS SECTION

Relation of Applicable Training* Courses to Each Occupation

Prepared by H. Voigt / T. Jackson

Date 6-20-77

CODE	OCCUPATION	General Inspection	Introduction to Supervision	Management Introduction to ADP	Mechanical Inspection	New Employee Orientation	Office Practices	Project Management	Project Management and Control Workshop	Resident Engineer Course	Secretarial Techniques	Shorthand Refresher	Technical Writing for Engineers	Urban Stormwater Management Seminar	Value Engineering Study Workshop	Wastewater Treatment and Disposal	Water Pollution Engineering	Workshop in Environmental Assessment				TOTAL
	COURSE TITLE	2	3	3	1	15	1	3	4	1	1	1	5	1	1	6	4	3				
A	Section Chief												X									
B	Chief, Grants Management			X				X								X	X	X				
C	Group Leader-Program/Priority Mgmnt.		X	X					X													
D	Administrative Assistant II - PPM					X			X													
E	Administrative Assistant I - PPM					X			X													
F	Clerk II					X																
G	Clerk I					X																
H	Technical Assistant II - PPM					X																
I	Technical Assistant I - PPM					X																
J	State Loan Officer					X																
K	Group Leader - AM		X	X																		
L	Administrative Assistant II - AM					X																
M	Administrative Assistant I - AM					X																
N	Group Leader - TM		X										X			X	X					
O	Technical Assistant II - TM	X				X							X			X	X					
P	Technical Assistant I - TM					X										X						
Q	Archaeologist					X												X				
R	Administrative/Quality Control Coord.							X														
S	Chief Engineer							X					X			X						
T	Project Engineer	X			X	X			X	X			X	X	X	X	X	X				
U	Secretary II					X						X										
V	Secretary I					X	X				X											

*Refer to the following training catalog for the source, duration, and cost of each training course.

TRAINING CATALOG

ORGANIZATION CONSTRUCTION GRANTS TIME PERIOD FROM June, 1977 TO Sept., 1978

PREPARED BY H. Voigt, T. Jackson DATE June 20, 1977

COURSE TITLE	SOURCE OF TRAINING	DURATION OF TRAINING (DAYS)	COST OF TRAINING PER STUDENT			TOTAL TRAINING COST
			TUITION	TRAVEL	PER DIEM	
1. Accounting Orientation for Administrative, Clerical, and Secretarial Positions	Civil Service Comm. Dallas	2	80	70	60	210
2. Advanced Wastewater Treatment	EPA/Texas A&M Dallas	5	0	70	120	190
3. Advanced Water Pollution Control-Biological	University of Texas at Austin	5	300	0	0	300
4. Advanced Water Pollution Control: Physical & Chemical Waste Treatment	University of Texas at Austin	5	275	0	0	275
5. Automatic Data Processing for Administrative, Clerical, and Secretarial Positions	Civil Service Comm. - Dallas	2	80	70	60	210
6. ADP Orientation for the User	Civil Service Comm. - Dallas	3	58	70	90	218
7. Basic Management Functions	Civil Service Comm. - Dallas	5	120	70	120	310
8. Basic Oral and Written Communications	Civil Service Comm. - Dallas	4	100	70	120	290
9. Better Office Skills & Services	Civil Service Comm. - Dallas	3	85	70	90	245
10. Concrete Construction Inspection	U.S. Corps of Engineers	5	0	200	160	360

*Per diem costs reflect increases recently authorized by the Texas Legislature ($30.00 per day in-state; $40.00 per day out-of-state). All travel costs are figured on the basis of air transportation.

TRAINING CATALOG

ORGANIZATION CONSTRUCTION GRANTS TIME PERIOD FROM _____ TO _____

PREPARED BY _____ DATE _____

COURSE TITLE	SOURCE OF TRAINING	DURATION OF TRAINING (DAYS)	COST OF TRAINING PER STUDENT			TOTAL TRAINING COST
			TUITION	TRAVEL	PER DIEM	
11. Construction Claims Preparation	Auburn Univ. Birmingham, Ala.	2	250	166	120	536
12. Construction Contracts	Civil Service Comm.-Dallas	5	160	70	120	350
13. Construction Quality Management	U.S. Corps of Engineers	3	0	200	120	320
14. Controlling Water Pollution	Texas Water Quality Board	2	0	0	0	0
15. Data Base Management Systems Concept	Civil Service Comm.-Dallas	3	125	70	90	285
16. Effective Technical Presentations	Texas Water Quality Board	3 (7 weeks)	0	0	0	0
17. Engineering Management	Civil Service Comm.-Dallas	5	150	70	120	340
18. Environmental Protection Agency Construction Grants Procurement Process Workshop	American Consulting Engineer Council - Denver	1	15	168	80	263
19. EPA Workshop on Construction Grants	EPA - Austin	4	0	0	0	0
20. Executive Secretary Seminar	Civil Service Comm.-Dallas	3	95	70	90	255

TRAINING CATALOG

ORGANIZATION CONSTRUCTION GRANTS TIME PERIOD FROM _____ TO _____

PREPARED BY _____ DATE _____

COURSE TITLE	SOURCE OF TRAINING	DURATION OF TRAINING (DAYS)	COST OF TRAINING PER STUDENT			TOTAL TRAINING COST
			TUITION	TRAVEL	PER DIEM	
21. General Inspection	U.S. Corps of Engineers	5	0	200	160	360
22. Introduction to Supervision	Civil Service Comm.-Dallas	5	120	70	120	310
23. Management Introduction to ADP	Civil Service Comm.-Dallas	2	90	70	60	220
24. Mechanical Inspection	U.S. Corps of Engineers	5	0	200	160	360
25. New Employee Orientation	Texas Water Quality Board	1	0	0	0	0
26. Office Practices	Civil Service Comm.-Dallas	3	85	70	90	245
27. Project Management	Southern Methodist University-Dallas	3	345	70	90	505
28. Project Management and Control Workshop	Civil Service Comm.-Dallas	3	125	70	90	285
29. Resident Engineer's Course	U.S. Corps of Engineers	5	0	200	160	360
30. Secretarial Techniques	Civil Service Comm.-Dallas	3	90	70	90	250
31. Shorthand Refresher	Civil Service Comm.-Dallas	3	90	70	90	250

TRAINING CATALOG

ORGANIZATION CONSTRUCTION GRANTS TIME PERIOD FROM _____ TO _____

PREPARED BY _____ DATE _____

COURSE TITLE	SOURCE OF TRAINING	DURATION OF TRAINING (DAYS)	COST OF TRAINING PER STUDENT			TOTAL TRAINING COST
			TUITION	TRAVEL	PER DIEM	
32. Technical Writing for Engineers	Civil Service Comm.-Dallas	5	150	70	120	340
33. Urban Stormwater Management Seminar	EPA - Dallas	4	0	70	120	190
34. Value Engineering Study Workshop	U.S. Corps of Engineers	5	0	200	160	360
35. Wastewater Treatment and Disposal	Civil Service Comm.-Dallas	5	160	70	120	350
36. Water Pollution Engineering	University of Texas at Austin	1 Semester	100	0	0	100
37. Workshop in Environmental Assessment	Civil Service Comm.-Dallas	3	140	70	90	300

INSTRUCTIONS FOR APPLYING TRAINING CRITERIA

As a part of the planning process, a determination is made as to the number of new hires and transfers needed. (This information is contained in Appendices K and L in the basic report "Pilot Test of State Agency Manpower Planning Methodology for the Texas Water Quality Board Construction Grants Section".)

Information on entry and upgrade training courses contained in the preceding "Training Catalog" was used with the number of anticipated new hires and transfers to formulate a training plan which lists types and amounts of training needed by each occupation during the planning period (FY 78). The "Training Catalog" also provided information on update or continuing education courses needed by personnel remaining in the same position from the beginning to the end of the planning period. The selection of specific training courses for the "Training Plan" was based upon management's knowledge of the construction grants program and past experience.

TRAINING PLAN

ORGANIZATION Construction Grants TIME PERIOD FROM June, 1977 to Sept., 1978

PREPARED BY H. Voigt, T. Jackson DATE June 20, 1977

COURSE TITLE	CODE	OCCUPATION	Number to be Trained	SOURCE OF TRAINING	DURATION OF TRAINING (DAYS)	COST OF TRAINING PER STUDENT			TOTAL TRAINING COST
						TUITION	TRAVEL	PER DIEM	
Accounting Orientation for Administrative, Clerical, and Secretarial Positions	H	Technical Assistant II (PPM)	2	Civil Service Comm.-Dallas	2	80	70	60	420
Advanced Water Pollution Control: Biological	T	Project Engineer	1	UT at Austin	5	300	0	0	300
Advanced Water Pollution Control: Physical and Chemical Waste Treatment	A	Section Chief	1	UT at Austin	5	275	0	0	275
	N	Group Leader - (TM)	1						275
	O	Technical Assistant II (TM)	2						550
	S	Chief Engineer	1						275
	T	Project Engineer	3						825
Automatic Data Processing for Administrative, Clerical, and Secretarial Positions	F	Clerk II	3	Civil Service Comm.-Dallas	2	80	70	60	630
ADP Orientation for the User	I	Technical Assistant I (PPM)	1	Civil Service Comm.-Dallas	3	58	70	90	218
Basic Management Functions	K	Group Leader (AM)	1	Civil Service Comm.-Dallas	5	120	70	120	310

*Per diem costs reflect increases recently authorized by the Texas Legislature ($30.00 per day in-state out-of-state). All travel costs are figured on the basis of air transportation. $40.00 per day